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Application Serial No. 10/823,105
Reply to final office action of December 8, 2008

PATENT
Docket: CU-3682

Amendments to the Claims

The listing of claims presented below will replace all prior versions, and listings, of claims in the application.

Listing of claims:

1-7. (cancelled)

8. (currently amended) A liquid crystal device element comprising:
a pair of parallel substrates;
conductive layers provided respectively on facing inner surfaces of these substrates;

liquid crystal alignment layers provided respectively with pre-tilt angle on facing inner surfaces of these conductive layers, and

a liquid crystal layer formed in between these pair of liquid crystal alignment layers,

wherein the liquid crystal layer has liquid crystal-soluble particles dissolved or dispersed in a matrix liquid crystal,

wherein each of the liquid crystal-soluble particles comprises a core having a diameter smaller than 100 nm and comprising one or a plurality of nanoparticles, and a protective layer comprising liquid crystal molecules or liquid crystal-like molecules provided on a periphery of the core,

wherein a control circuit of applying voltage, while modulating at least frequency among frequency and voltage, is provided on the conductive layer for varying light transmittance of the liquid crystal layer, and

wherein the matrix liquid crystal, in which the liquid crystal-soluble particles are dissolved or dispersed, shows an electro-optical response such that a voltage at which the matrix liquid crystal starts its response changes depending on a frequency of applied electric field, and

wherein under a constant applied voltage, an electro-optical response is turned on by switching the frequency of applied electric field from low frequency to high

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frequency, and the electro-optical response is turned off by switching the frequency from high frequency to low frequency.

9. (original) The liquid crystal device element according to claim 8, wherein a time constant of response concerning turning the electro-optical response on and off is in a range of 0.1 ms to 10 ms.
10. (original) The liquid crystal device element according to claim 8, wherein a frequency modulation range of the electro-optical response is in a range of 20 Hz to 100 kHz.
11. (original) The liquid crystal device element according to claim 8, wherein the nanoparticle constituting the liquid crystal-soluble particle is at least one kind of metal atom selected from Ag, Pd, Au, Pt, Rh, Ru, Cu, Fe, Co, Ni, Sn and Pb.
12. (original) A method for driving a liquid crystal device element, wherein the liquid crystal device element according to claim 8 is driven by using an active matrix mode.
13. (previously presented) The liquid crystal device element according to claim 8, wherein the short axis width of the liquid crystal molecule or liquid crystal-like molecule is equal to or less than the diameter of the core.